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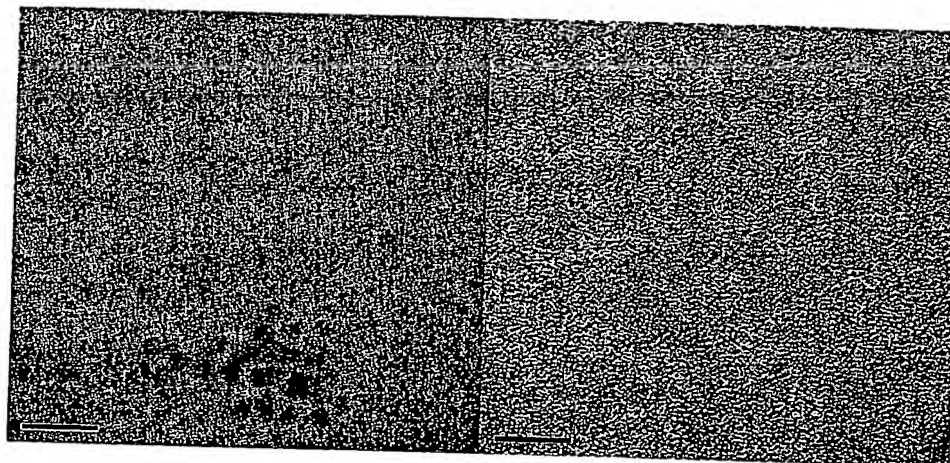
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[Continued on next page]

(54) Title: METAL OXIDE-CONTAINING NANOPARTICLES



TEM of pyridine-protected Cu<sub>2</sub>O nanoparticles

(57) Abstract: The present invention provides a copper oxide-containing composition that includes copper oxide nanoparticles and one or more heteroatom donor ligands bonded to the surface of the nanoparticles, where x and y are numbers having a ratio that is equal to the ratio of the average number of M atoms to the average number of O atoms in the nanoparticles. The nanoparticles are stabilized by the one or more heteroatom donor ligands which act as a protective layer that cap the surface of the nanoparticles. The present invention also provides a solution of the copper oxide nanoparticles that may be applied to a substrate and then subsequently reduced to copper metal. Finally, the invention provides a method of preparing the copper oxide nanoparticles.

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**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ,

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# INTERNATIONAL SEARCH REPORT

International application No.

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B32B 3/00; H01L 31/00

US CL : 136/256, 263; 428/323

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## B. FIELDS SEARCHED

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U.S. : 136/256,263; 428/323

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 2003/0230337 (Gaudiana et al.) 18 December 2003 (18.12.2003), paragraphs [0015], [0049]-[0050], [0079]-[0080], [0085]-[0086], [0104]-[0107], [0111-0116], [0122], [0131]-[0137], [0147], [0161], [0179], and [0206].	1-59
X,P	US 2003/0192585 A1 (Beckenbaugh et al.) 16 October 2003 (16.10.2003), paragraphs [0041][0043][0046]-[0047]; and figures 4, 6, 16, 19 and 22.	1-19 and 25-41
X	US 5,897,945 (Lieber et al.) 27 April 1999 (27.04.1999), column 1, line 29 to column 2, line 42; column 3, lines 27-65; column 4, lines 8-39 and 48-64; column 6, line 3 to column 7, line 63.	1-59

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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